Medical

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ACADEMY OF MEDICINE

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EDITORIAL

In May, 1850, at a stated meeting of the Academy, a resolution was presented by the Committee on Publication recommending that the proceedings of the Academy be published in the form of a bulletin "to appear monthly or otherwise as material may serve, and that the Committee may have power to make the necessary selection." This resolution was adopted and the Committee was instructed to report a plan. Such a plan was discussed at the next stated meeting and decision was made that the Academy issue "a volume of Transactions as more conducive to its interests than a monthly or quarterly bulletin."

On July 3, 1850, it was resolved "that all papers that may be read before the Academy be referred to the appropriate scientific section to report and select such papers as may be deemed worthy of publication."

Publication of the "Transactions" was begun in 1851. Four volumes appeared under this title which contained the transactions of stated meetings and the papers presented for the period 1851 to 1871.

Early in 1859 "the subject of the establishing of a bulletin was agitated and referred to a special committee to inquire into the expediency of it." Thereafter the matter came up at several meetings, indicating that inquiries were being made as to the best way in which to carry on a publication. On February 16, 1860, it was decided that the title of "The Bulletin of The New York Academy of Medicine" be adopted.

Various ways of having the Bulletin printed were considered. It was finally arranged with the New York Journal of Medicine to have the proceedings first published in that Journal, the Journal then to furnish monthly to the Council 750 copies in pamphlet form. This arrangement proved unsatisfactory after the publication of the first number. On June 21, 1860, the Council decided that the Bulletin be published by the Academy, and in 1862 the "Bulletin of The New York Academy of Medicine"

appeared. It was published irregularly in the form of separate pamphlets, the first volume covering proceedings of stated meetings from January, 1860, to October, 1862. The Bulletin went on to 1871, four volumes in all having been published. In that year it was decided that the distinction between the Bulletin and Transactions be abolished and that the matter published be entitled "Transactions of The New York Academy of Medicine."

Thereupon the Academy began the publication of "Transactions, Second Series," in much the same form in which the Bulletin appeared. Up to 1890 each volume covered the stated meetings of a two-year period. Then for five years each volume covered the transactions of a single year. During this time the volumes steadily increased in size, that of 1895 going to 575 pages. However, the next volume, the last of the second series of Transactions, contained but 471 pages, although it covered a period of six years—1896 to 1901.

Dissatisfaction on account of delay in the appearance of papers presented at the meetings appears to have been the main reason for discontinuing publication at that time.

During the past few years the activities of the Academy have so considerably increased that a need has appeared for a medium of expression for the work of the Academy, and through which the Fellows might be advised of the condition of Academy affairs. Accordingly, the Council of the Academy has decided upon the publication of a monthly Bulletin. A Committee on Publication has been appointed, composed of Dr. Charles L. Dana, Chairman, and Drs. Fenwick Beekman, Samuel A. Brown, Charles A. Elsberg, E. Livingston Hunt, Albert R. Lamb, Frederic E. Sondern and George B. Wallace. The Bulletin will be partly educational and partly informative. Lectures, discussions and papers presented at Academy meetings will form a considerable part of the contents of each number. Activities of the Committees will be presented from time to time in the form of papers and reports. The trustees and officers of the Academy will use the Bulletin as the official medium for presenting their reports and recommendations. Announcements of forthcoming meetings and programs and other items of current interest will be made from month to month.

The Bulletin will be known as the "Bulletin of The New York Academy of Medicine, Second Series."

ADDRESS OF THE INCOMING PRESIDENT

LADIES AND GENTLEMEN:

I wish to express to you in assuming the duties of the responsible office to which I have been elected my sincere appreciation of your confidence and your generosity. My predecessor, who has served the Academy for a term of six years, and whose devotion and ability are well known, makes me appreciate more than ever the importance of the duties which you have called upon me to assume. I shall exert my best efforts in the interest of your Academy, and it will be necessary very often to ask for your assistance and generous indulgence. It has been customary in the inaugural address of the President to review the principals for which the Academy stands. The great tripod upon which these principals have been erected is:

1. Cultivation and advancement of the science of medicine.
2. Promotion of the character and honor of the profession.
3. The elevation of the standards of medical education.

These principles always have and always will be adhered to most tenaciously. The character of the scientific program presented during the year attests the first principle. It is hoped in the near future a fixed program committee will assume the responsibility for arranging the scientific part of the Academy activities. The Public Health Committee, under the chairmanship of Dr. Dana, has functioned most ably and has accomplished much work of great importance relating to the community and profession.

Secondly. The promotion of the character and honor of the profession. This principle will be maintained as in the past, upon the highest plane.

Thirdly. Elevation of the standards of medical education. One of the activities of the Academy which will be most extended is the work of the Committee on Education. This committee will be developed and have supervision over postgraduate courses in the city; provide information regarding educational opportunities abroad, locally and in other parts of the country; supply information to our foreign visitors and members of the profession from all parts of the United States and innumerable phases of work relating to education.

It seems to me that it is more appropriate at this time to devote my remarks to the project in which we are all so interested. It has been necessary in the development of the plans of the new Academy for the officers to make many important decisions and I feel that in some instances there have been members who are not entirely familiar with the reasons determining their decisions, and therefore think it might be advisable to present to you as briefly as possible the principal points in the plans as they have been developed up to this time. There are always differences of opinion, and, in fact, differences of opinion and constructive criticisms are most helpful, but misunderstandings often lead to unfair criticisms and lack of unity.

Before taking up the present movement for our new development I am going to ask you to go back with me to the conception of the Academy. As you know, the Academy originated in 1846 through the efforts of a group of pioneers who had vision enough to see the necessity for creating a medical organization independent of the colleges or the medical societies then established. They little knew how well they built or planned, or the rapid development, magnitude and usefulness of this organization in the civic and professional life of this city. It is interesting to note that while the beginning of this Academy occurred in 1846, there is evidence of an attempt to form a similar organization previous to this date, and I quote from an original copy of the N. Y. Medical & Physical Journal, showing that an Academy of Medicine was organized in 1826, preceding our organization by twenty years, with the following officers: Felix Fascalis, president; John B. Beck, John Watts, John Stern and Jos. M. Smith, vice-presidents; Daniel L. M. Peixotto, secretary; Samuel W. Moore, treasurer, and John K. Rogers, curator. This effort apparently never went beyond the organization meeting and the election of officers. I am indebted for this information to Mr. John S. Brownne, who has served the Academy so loyally and faithfully as librarian for many years. I mention this matter as it is of historical interest and I think never before referred to in the history of medicine in New York City. The idea of our Academy was first presented at a dinner of the Society for the Relief of Widows and Orphans of Medical Men. For a number

of years meetings of the society were held in the Lyceum of Natural History and in the building of the University of New York on Washington Square and subsequently at the College of Physicians and Surgeons, 23rd Street. From its very beginning efforts were made to provide it with a building of its own. It was not until 1875 that a building was purchased at 12 West 31st Street. This was sufficient for the needs of the Academy for a number of years, but the demands upon it for meetings and for library purposes soon made necessary the consideration of plans for additional space and efforts were made by friends and the profession to raise funds for a new building. Eventually, in 1890, this building was formally opened. It was thought that the accommodations were ample, but in a period of 15 years it became evident that facilities were entirely inadequate for the purposes and activities that had grown within its organization, and in 1909 committees were again organized to consider how best to relieve the crowding and limitations that existed in the meeting rooms and in the library. After careful consideration additional buildings were purchased to the east of the present building and on 44th Street. It was at this time that the Committee on Plan and Scope succeeded in obtaining from the members of the Academy subscriptions amounting to $140,000. This was known as the Academy's Extension Fund. After many meetings, deliberation and consideration of plans, it was evident that the utilization of this property would be a very costly experiment and would after all only serve as a makeshift and would in no way solve or make possible the developmental plans and activities of the society. It was a matter of great disappointment to many of our members when it was necessary to give up this plan and to postpone the building of the addition. Yet, in the light of what we know, we can see the evidence of good judgment and forethought exercised by the officers and by the committee. The extension fund was invested and is now available for the purposes for which it was created. It is interesting to note that Dr. Witthaus, one of the staunch supporters of the Academy, was the first subscriber to this fund. It was not until 1923 that the matter was again put in form, when at a stated meeting of the Academy a resolution was adopted authorizing

the president to appoint a Building Committee. It was evident upon deliberate study that a large sum of money would be necessary for this purpose, and a committee under the able direction of Dr. Royal S. Haynes was organized to solicit subscriptions from the members. The efforts of this committee were remarkable in their results. Members and friends responded and liberally contributed the sum of $531,284.05 for the project. The great response was inded a remarkable evidence of the interest of the members in their desire to provide greater facilities for this association. Through the efforts of the officers of the Academy the aims and necessities of the situation were placed before the Rockefeller Foundation with the result that the sum of $1,250,000 was appropriated by the Foundation for endowment and extension of the Academy activities. The Carnegie Corporation, as an evidence of their desire to help the medical profession, also offered to appropriate for a new building the sum of $1,000,000 subject to their approval of the site and the plans for the building. We are greatly indebted to Dr. Pritchett for his personal interest, as it was largely due to his efforts that the Corporation became interested. The officers of the Academy have appealed to the Carnegie Corporation for an additional sum of $550,000 for building purposes and have every reason to believe that their efforts will meet with success. Certain generous donors, among them Mrs. Helen Hartley Jenkins, Mr. Edward S. Harkness, Mr. George F. Baker and Mr. James B. Ford for the estate of Dr. Everett Herrick, subscribed toward the purchase of the new plot and it seemed as though all obstacles had been overcome which would in any way prevent the immediate erection of a new building. After a careful study of available properties a site was purchased at Park Avenue and 60th Street for the sum of $754,500 and work was at once begun upon drawings and plans for the erection of the building. Further consideration on the part of the officers of the Academy soon evidenced the fact that there were many objections to the site selected, among them that the corner of 60th Street and Park Avenue was very little better in respect to congestion than the site in 43rd Street, that the amount of money which had been placed in the property was in excess of the sum that the Academy could afford to invest and that it would

have been necessary in some way to materially reduce the scope of the contemplated plans or obtain an additional $1,000,000 for building and $2,000,000 for endowment before the project could be consummated. Fortunately, before any serious contracts or obligations had been undertaken, an opportunity presented itself to dispose of this property at a profit, which, in view of the above objections, left no alternative but to accept it and to locate upon another site with a better understanding of the financial requirements necessary to make the undertaking a success. Once again it was a question of hunting a suitable site upon which to erect a home. Many locations were investigated and their advantages and disadvantages discussed, and eventually a property on the corner of 103rd Street and Fifth Avenue was, after a unanimous vote of the Academy, purchased by the trustees. There has been a considerable criticism about the selection of this property, principally because of its geographical location, but I think that with all the facts before you, you will agree that it was a wise and proper selection on the part of your officers. First, from its position opposite the park, perpetual light was assured; second, it was in a district that would permit an easy approach and was free from many of the disadvantages of traffic; third, the property was almost double the size of the one at 60th Street, being 175 feet by 100 feet as compared with 100 by 100 in the former location; fourth, it was possible to purchase this property for the sum of $225,000, thus making available for endowment and equipment the sum of $613,000 which had been invested at 60th Street; fifth, with the moneys appropriated by the Rockefeller Foundation, the gift of the Carnegie Corporation, the generous gifts of friends of the Academy, subscribed by members, equity in the 43rd Street property and other assets of the Academy, all go to make practicable the erection of a building and the provision for an endowment which will care for the activities as contemplated in the development of our proposed expansion. Otherwise the present plans would have been delayed indefinitely by reason of the necessity for raising more money. The objections to the site as presented by some of the members were that it was too far uptown and not easily accessible. This, at first sight, seems a fair criticism, yet when we study the rapid growth

and development of New York, who can predict what changes will occur in this vicinity within the next ten years? It is readily reached by the transportation lines on Lexington and Madison Avenues, both surface and subway, with a station at 103rd Street; by the Fifth Avenue buses, a street available for motor transportation, and is also within reasonable distance of cross-town lines. Therefore, it does not seem that there is the slightest question but that the decision of the Academy and your officers was a judicious and proper one. There will be erected on this site a building which will be a monument to the generosity of the Carnegie Corporation, Rockefeller Foundation, the profession and friends of the profession, that will amply house all of the activities of the Academy now organized or to be organized and provide meeting rooms for the Academy, associated societies, the Public Health Committee, the Education Committee, a library ample in size to accommodate 327,000 volumes and provisions for future expansion, and many other lines of work now under consideration and contemplated by the trustees and council.

Let us for a moment make an inventory of our future possibilities. If we obtain the additional appropriation for building we will come into possession of a building costing one million and a half, the gift of the Carnegie Corporation, equipped at an expense of about $175,000 by the Academy on a plot costing $225,000 provided by generous friends, and would have for endowment, including the Rockefeller Foundation gift, a sum approximating two and a half millions. This estimate must necessarily be approximate because the equity in the 43rd Street property cannot be determined until a sale has been made, and until the Carnegie Corporation has arrived at a definite decision.

We therefore must, I think, be congratulated upon the consummation or practical consummation of plans for which we all have been striving these many years, and it is my hope that the understanding of these facts will bring about a closer relationship between the officers and the members of the Academy. Dr. Duel, who as chairman of the Building Committee has devoted a great deal of time to the study of the plans, will make a detailed report a little later.

In conclusion, I must beg your indulgence and become somewhat personal. The retiring president, Dr. George D. Stewart, who has guided the destinies of the Academy with the assistance of the trustees and council for six years, and who during that time has been called upon to decide many momentous and serious questions of policy, has given much of himself in order that we might benefit, and if, during my incumbency of office, we will be privileged to see the erection of a new building, it would seem to me but fair to state that anything that we may accomplish will be but the completion of the plans which he and his associates have so carefully developed, and for which we all, as members, are deeply indebted.

REPORT OF THE BOARD OF TRUSTEES

To the Fellows of the New York Academy of Medicine:

During the year 1924 the Board of Trustees has held eight regular meetings and in addition seventeen special meetings. During the winter of 1924 a large amount of time was given to the finances of the Academy, especially in regard to the proposed new building. The plans for the proposed building at 60th Street and Park Avenue called for an expenditure of over $2,000,000. The Carnegie Corporation, which had already appropriated $1,000,000, did not feel able to increase its appropriation sufficiently to construct a building of the type called for. A re-study of the needs of the Academy was made and although it was found that a smaller building could be constructed on the 60th Street site, it was considered more desirable to secure if possible a larger plot and at a considerable less expense than the one at 60th Street. The 60th Street plot had been bought by the Academy for $754,500, upon which were unpaid mortgages, amounting to $141,000. The Trustees finally decided that the wiser solution of the problem was to sell the 60th Street plot, and recommended this procedure to the Fellows of the Academy, which recommendation was unanimously approved by the Fellows present and voting at a stated meeting held on May 1, 1924. This property was finally sold for the sum of $1,000,000—$500,000 of which has already been paid. The balance remains in a

mortgage on the property, which is steadily increasing in value as a building is now being constructed on the plot.

Before the 60th Street property was sold the Trustees made a most careful search of all properties in the city which seemed available for the Academy needs. Such sites are not easily obtained and over one hundred were considered and studied before the Trustees finally determined that the lot at 103rd Street and Fifth Avenue was suitable to the Academy needs and the Academy approved of the acquisition of this site, which was finally purchased for $225,000. The Trustees feel that the Academy is very fortunate in having made this change, as a number of the Board were quite fearful of the enormously increased expenditure for maintenance which will naturally result when the Academy is installed in a new building. Although it is known that a number of the Fellows of the Academy feel that this site is somewhat inaccessible, the Trustees are convinced that this decision will be for the best interests of the Academy. The difference in the cost of the land will enable the Academy to add to its endowment, which will materially aid in the maintenance of our new building and new activities.

The Trustees decided during the year to change the fiscal year of the Academy, which has been from November 1 to October 31, to the calendar year, January 1 to December 31. A number of years ago the fiscal year was changed so that financial reports could be prepared in time to present them to the Academy at its January meeting. It is now found that by a rearrangement of the work it will be possible to present such reports in January even if the fiscal year is the same as the calendar year.

The income and expenditures of the Academy will be given in detail in the report of the Treasurer, but attention is called to the fact that the total receipts of the Academy for the fourteen months ending December 31 amounted to $149,431.31 and the expenditures amounted to $155,523.02, leaving a deficit of $6,091.71. We owe to restricted funds $20,159.85, leaving an actual deficit at the end of the thirteen months of $26,251.56.

At the present time the funds of the Academy as invested in the General Permanent Fund, the Endowment Fund, the Library and other restricted funds are as follows: There are invested in

first mortgages on New York City real estate $898,500, in bonds of a par value $550; and in the real estate of the Academy at 17, 19 and 21 West 43rd Street, 103rd Street and Fifth Avenue, and at 222 East 83rd Street, $616,926.59.

There have been a few changes in staff during the past year, the most important of which has been the appointment of a Director who is giving an increasing amount of his time to Academy affairs and in particular to the plans for the construction of the new building. The work of the Librarian and his staff and that of the various employees in the building has been most satisfactorily performed throughout the year.

CHARLES L. DANA, *Chairman*

ABSTRACT OF THE TREASURER'S REPORT FOR 14 MONTHS ENDING DEC. 31, 1924

ASSETS AND LIABILITIES

Assets

Cash in Banks:			
Income of Funds	$ 1,691.56		
Principal of Funds	17,008.06		
		18,699.62	
Cash in Office		10.00	
Investments:			
Bonds and Mortgages		899,050.00	
Real Estate:			
17–19–21 W. 43rd St.	284,426.59		
15 W. 43rd St.	100,000.00		
222 E. 83rd St.	7,500.00		
5th Ave.–103rd St.	227,548.58		
		619,475.17	
Library		80,000.00	
Estate of Dr. Charles A. Powers		1,513.98	
			1,618,748.77

Liabilities

Principals of Trust Funds		894,291.27	
Principals of Other Funds:			
Academy Extension Fund	133,908.88		
New Site Fund	495,096.55		
		629,005.43	
Mortgages, 17 West 43rd Street		100,000.00	
Prepaid Dues		30.00	
		1,623,326.70	
Less deficit:			
Unexpended Income, Library	1,701.63		
" " Special Fds.	18,458.22		
	20,159.85		
Less Academy Deficit	24,737.78		
		4,577.93	
			1,618,748.77

Summary of Annual Statement

Income

Unrestricted		$ 56,629.83
Restricted:		
Petty Cash	10.00	
Holt Tablet Fund	596.64	
		$ 57,236.47
Carnegie Architects'		13,021.55
Library Funds		14,429.38
Public Health Committee		15,849.03
Rockefeller Appropriations:		
Direction		11,377.95
Survey, etc.		5,000.00
Bureau of Information	11,592.08	
Carnegie (Med. Educ. Soc.)	15,186.00	
Bulletins	1,319.25	
		28,097.33
Carpenter Lectureship Fund		361.65
Gibbs Prize Fund		3,161.85
Loomis Entertainment Fund		896.10
Charles A. Powers Legacy		
		$ 149,431.31

Expenditures

Operation, Administration, Corporation Expense	$ 60,631.35
Architects' Fees	13,021.55
Library	34,070.45
Public Health	15,849.03
Direction	8,787.75
Survey	2,914.47
Committee on Medical Education, Bureau of Clinical Information	15,261.97
1924 Lecture	312.15
Gibbs Fund (Transferred to principal)	2,445.32
Collations	715.00
Inheritance Tax	1,513.98
	$ 155,523.02
Expenditures	155,523.02
Income	149,431.31
	$ 6,091.71

Owed to Restricted Funds:		
Rockefeller Revolving Fund	$ 2,590.20	
" Survey Fund	2,085.53	
Carnegie Med. Educ. Fund	12,835.36	
Gibbs Prize Fund	716.53	
Carpenter Lectureship Fund	49.50	
Loomis Entertainment Fund	181.10	
Library Funds, unexpended income	1,701.63	
		20,159.85
		$ 26,251.56
Less prepaid on Powers Legacy		1,513.98
DEFICIT		$ 24,737.58

SETH M. MILLIKEN,
Treasurer.

OXYGEN THERAPY IN PNEUMONIA

CARL A. L. BINGER

(From the Hospital of the Rockefeller Institute for Medical Research, New York, N. Y.)

It is extraordinarily difficult to establish the efficacy of a therapeutic agent. If this is true of a specific chemical or serological substance it is even more so of a drug like oxygen in pneumonia which is used essentially as a supportive measure and not as a direct attack on the infecting organism. There are, in general, two methods of approach to a problem of this sort—one a statistical, two an experimental one. It should be stated at the outset that we have at present nothing to contribute to the first. Because of the complexity of the material and the difficulties involved in its analysis, it is quite impossible now, and probably will be for many years, to acquire any definite information about the value of oxygen on a statistical basis. We are, however, now in a position to state certain facts about the therapeutic value of oxygen from an experimental and physiological point of view and to provide an adequate rationale for its use.

For a more intelligent understanding of this subject we should consider first its history and secondly the normal physiological transport of oxygen in the body. In general the therapeutic use of oxygen may be divided into three periods. First a *Period of Naïve Enthusiasm* which immediately followed the discovery of oxygen by Priestley in 1774 when oxygen was hailed as a panacea. It was, of course, a very romantic idea to have separated from the air its life-sustaining principle and accordingly oxygen inhalations were used for almost every conceivable malady from hysteria to bubonic plague and in almost every conceivable form —even in the form of oxygenated bread, which became a therapeutic fad. But the oxygen bubble burst. After fifty years or more of hopes deferred, we enter on the second period, which we may designate as the *Period of Dogmatic Denial.* It is in this period that most of us were educated. Now the reasons for the change of heart are apparent. Physiological research showed that arterial blood normally carries nearly its maximum load of oxygen, and that increasing the oxygen concentration of the

inspired air does not result in increased metabolic activity. It was natural to conclude from this that if the blood were already saturated with oxygen and if increasing the oxygen in the air breathed did not augment the oxygen consumed there was nothing to be gained from oxygen administration. But a more telling reason for the increasing disrepute into which oxygen therapy had fallen was the wholly inadequate methods used for its administration. We are all acquainted with the familiar scene: the moribund patient with a "death rattle" in his throat, the hurried call for an oxygen cylinder, and the funnel held over the dying man's face. And yet I venture to say that none of us has ever seen this do any good and we have all been more or less conscious of trying to bolster up the courage of the relatives rather than of hoping for any real benefit to the patient. As has been well said we might as well administer tincture of digitalis by spraying the drug in an atomizer as giving oxygen by holding a funnel several inches away from a patient's nose and mouth. To administer oxygen effectively we must raise the partial pressure of the gas in the patient's alveolar air and this should be done, as far as is practicable, quantitatively as with any other drug.

This brings us to the third period in the history of oxygen therapy—the *Period of Experimental Skepticism* on which we may reasonably say we are now well embarked. But let us consider first the means by which oxygen is normally transported in the body. Normal human blood contains about 15 grams of hemoglobin per hundred cc. This is sufficient to combine chemically with 20 cc. of oxygen. The blood may contain approximately 20 cc. of oxygen per hundred cc., or 20 volumes per cent. when it is saturated. This represents its oxygen-carrying capacity and when it contains its maximum load we speak of the blood as being 100 per cent. saturated. Now the blood in the arteries is almost completely saturated, containing instead of 20 volumes per cent. from 18 to 19. It is, therefore, normally from 95 to 98 per cent. saturated with oxygen. In its passage through the tissues the blood loses approximately 5 volumes per cent. and we find the venous blood therefore containing about 13 volumes per cent. This matter may be expressed in a slightly

different way. The arterial blood, which, we have said, contains approximately 19 volumes per cent., differs from the blood when completely saturated by one volume per cent. It may therefore be said to have one volume per cent. of oxygen unsaturation and similarly the venous blood would have 7 volumes per cent. of unsaturation. If we assume that the blood in the capillaries is a mean between the arterial and the venous blood in its oxygen content, its unsaturation can be expressed thus

$$C = \frac{1+7}{2} = 4$$

In other words, the capillary blood has an unsaturation of 4 volumes per cent. Lundsgaard and Van Slyke have shown that under ordinary circumstances, especially when there is no anemia present, clinical cyanosis appears when the capillary unsaturation has reached a level of 6 volumes per cent. or over. It is important to remember that the cyanotic color depends primarily upon the absolute concentration of reduced hemoglobin in the capillary blood and that for this reason the concomitant occurrence of anemia may prevent the appearance of cyanosis even in the presence of oxygen want.

From a clinical point of view cyanosis is certainly one of the outstanding features of oxygen want. We know now that oxygen want may bring on even in the normal human subject a trend of serious and distressing symptoms. These may be acute in onset when the subject is suddenly exposed to atmospheres with low partial pressure of oxygen, or they may be chronic. From the point of view of oxygen want as it occurs in a disease like pneumonia, we are interested chiefly in the acute variety.

A few years ago I had the privilege of taking part in a physiological expedition to the Peruvian Andes for the purpose of investigating the effect of high altitudes on the human organism. In the company of Doctor Alfred Redfield I left Lima, which is at sea level, at about eight o'clock in the morning and within six hours we had crossed the continental water-shed at Ticlio at an altitude of some 15,000 feet. At this point a wash-out on the railroad necessitated our getting out of the train and walking approximately 200 yards to another train. I can best describe my own sensations by saying that I felt like an octogenarian

who had spent a winter's night on a hard park bench and been suddenly aroused by a hit on the head with a policeman's night stick. There was intense occipital and frontal headache, palpitation, precordial pain, rapid breathing, nausea, and a great sense of depression. The other members of the expedition experienced the same effects and the symptoms, including sleeplessness, visual disturbances, vertigo, and in some instances, elevation of temperature continued for several days. And yet all these symptoms were brought on, in my own instance, by a reduction of the percentage saturation of my arterial blood from 95 to 84. If we examine the dissociation curve of oxyhemoglobin which represents the manner in which hemoglobin combines with oxygen when subjected to increasing partial pressures of oxygen, we will see that a change such as I have just described was brought on by a fall in the tension of oxygen of the alveolar air of approximately 50 mm. Now the object of all this is simply to show you what a profound series of untoward symptoms can be brought about by reducing the pressure of oxygen in the blood of a normal human being. And yet the great majority of patients with lobar pneumonia suffer from just such a reduction of oxygen pressure. Now we frequently see a percentage saturation very much lower than the one I have cited. Stadie showed, in a series of 33 pneumonia patients, that none recovered whose arterial saturation was below 70 per cent. If we consider that the patient with pneumonia has to fight a severe, progressing infection with its associated toxemia, it is perfectly clear that the added disadvantage of anoxemia may be such as to overcome him. And it becomes perfectly apparent that it is to his advantage to save him from the extra burden on his cardio-respiratory and central nervous systems which anoxemia involves.

That this can be done can be shown by observations made on the arterial blood of pneumonia patients before and after oxygen therapy in which we see in every instance an increase in the percentage saturation, often restoring it to the normal level.

I shall not discuss at length the various causes of anoxemia in pneumonia but simply emphasize once more its existence, its importance from a physiological point of view, and the fact that it frequently can be remedied by proper, early, and continuous administration of oxygen.

This brings us to a brief discussion of the various methods available. The essential of a good method is one which, with the least disturbance to the patient, will raise the concentration of oxygen in the inspired air to a desired and preferably a known level. There are several such methods now available. None of them is perfect but any one of them is better than the old funnel method, and in spite of disadvantages should be used. Of the three portable methods the best are those of Haldane and Yandell Henderson in which the patient breathes oxygen through a mask from a bag into which the gas is discharged at a known rate; and the one of Barach in which the patient breathes through a mouth-piece into a bag—provision being made for continuous removal of carbon dioxide. It is often very difficult in seriously sick, delirious patients, to apply successfully a method requiring the use of either a mask or a mouth-piece. Recently Leonard Hill and also Roth, of the Battle Creek Sanitarium, have described tents which fit over the bed in which the atmosphere can be raised to a desired level of oxygen. I have had no personal experience with either of these methods. Doctor Barach has devised a somewhat improved variety of tent which he is now using at the Presbyterian Hospital.

Of course the ideal method is the oxygen chamber and we are fortunate enough to have such a chamber at the Hospital of the Rockefeller Institute. The chamber consists of an air-tight, fireproof room 10 x 10 x 8 feet in dimensions with a vestibule which allows passage into and out of the chamber with the minimum loss of oxygen and a ventilation system which provides for cooling and drying the air and scrubbing it free from carbon dioxide. The chief advantage of the chamber method is that it permits of adequate and unhampered nursing care and in a disease like pneumonia we are all aware of the great importance of good nursing. Furthermore, it permits us to make physiological observations on the patient throughout the course of the disease. It is our practice to take blood from an artery before putting the patient in the chamber and then to raise the oxygen in the atmospheric air sufficiently to overcome the existing anoxemia. This fact we determine by a second arterial puncture. In our experience 40 per cent. oxygen, or approximately

twice the normal atmospheric concentration, is sufficient to raise the blood to as near normal as it can be. If 40 per cent. does not do this it is unlikely that a higher percentage will. The chamber method has given us facilities for putting the use of oxygen on a precise and quantitative basis and it is our opinion that this is as essential here as with the use of any other drug.

RATIONALE OF THE SPECIFIC TREATMENT OF LOBAR PNEUMONIA

RUSSELL L. CECIL

What are the reasons for administering specific serum in lobar pneumonia? What theoretical or practical evidence have we of its efficacy in controlling pneumococcus infections of the lungs? In order to answer these questions properly it will be necessary for us to go back and review briefly the history of the development of anti-pneumococcus serum and the more recent derivatives from it.

Years ago Neufeld showed that animals vaccinated with pneumococcus cultures, killed or living, developed an immunity against the organism. This fact has been amply verified by other investigators, more recently by Cecil and Steffen, who found that monkeys vaccinated against pneumococcus were immune to pneumococcus pneumonia. Cecil and Blake noted that a similar immunity to pneumonia existed in monkeys that had recently recovered from the disease.

Pneumococcus immunity is probably dependent upon a number of factors—agglutinins, precipitins, opsonins, etc., but the most conspicuous and probably the most important of these immune substances are the so-called protective bodies. The "protective bodies" (or the "protective substance") receive their name from the fact that mice, when they are injected with virulent pneumococci, may be protected from death by the simultaneous injection of a certain amount of anti-pneumococcus serum. This protective substance in anti-pneumococcus serum has never been isolated in a chemically pure form, but it can be

removed from serum as we shall see later. Dochez found that patients recovering from lobar pneumonia developed protective bodies against the pneumococcus about the time of crisis. He inferred, therefore that they played a significant part in pneumococcus immunity.

The next important step in the study of pneumococcus immunity was the differentiation of the four types of pneumococcus. This classification was started by Neufeld and developed to its present state by Dochez and Gillespie. Cole made a great step in advance in the specific treatment of pneumonia when he introduced Type I anti-pneumococcus serum. Cole also worked with Type II serum, but the results were inconclusive. The effect, however, of Type I serum on patients with Type I pneumonia was very striking, producing in many instances a rapid drop of temperature, and sterilizing the blood in cases with pneumococcus septicaemia. Furthermore, the mortality statistics based on cases of Type I pneumonia treated at the Hospital of the Rockefeller Institute were very encouraging. Cecil and Blake showed that monkeys infected with fatal Type I pneumonia could in every case be saved by the intravenous injection of Type I anti-pneumococcus serum. The temperature rapidly dropped to normal and pneumococci disappeared from the blood. Bull found that rabbits with pneumococcus Type I septicaemia could be saved by the intravenous injection of Type I anti-pneumococcus serum. The pneumococci in the blood stream were agglutinated and caught in the lymphatic spaces of the liver and spleen where they underwent phagocytosis. Blake and others have found that when virulent pneumococci are grown in anti-pneumococcus serum they lose much or all of their virulence. Apparently this is one of the chief functions of the protective substance, namely, to deprive the pneumococcus of its virulence. Neufeld showed years ago that the phagocytes will not take up virulent pneumococci; only avirulent strains are subject to phagocytosis.

While the body is producing protective bodies to defend itself against the pneumococcus, the pneumococcus in its turn is producing a peculiar substance, called by Avery the S substance, the function of which is presumably to protect the pneumococcus.

It has the power of neutralizing the protective substance and in this way probably prevents phagocytosis of the invading pneumococci. This S substance is not toxic in the ordinary sense of the word, but by interfering with the immune mechanism gives the pneumococcus greater opportunity for attacking the host.

From this discussion we may discern the more important functions of the protective substance. They are:

1. To remove pneumococci from the circulating blood.
2. To render pneumococci avirulent and therefore susceptible to phagocytosis.
3. To neutralize the soluble substance which is the protective weapon of the pneumococcus.

The object, therefore, of specific therapy in pneumonia is to supply the patient as early in the disease as possible with an abundance of protective substance. The patient is simultaneously manufacturing his own protective bodies, but at a rate perhaps, insufficient to meet the demand.

During the past four years we have been studying the action of various pneumococcus antibody solutions in the wards and laboratories of Bellevue Hospital. Most of the investigations have been conducted with Huntoon's pneumococcus antibody solution, but more recently we have also been experimenting with Felton's concentrated anti-pneumococcus serum. Daily blood cultures have been taken on many of our cases, and the relation of pneumococcus septicaemia to prognosis has been studied. We have also been interested in the effect of protective substance on pneumococcus septicaemia.

In 37 cases of pneumococcus pneumonia with positive blood cultures, 29 died, a death rate of 78.3 per cent. In contrast to this heavy mortality 70 cases with sterile blood cultures showed a mortality of only 10.0 per cent. It is clear, therefore, that when pneumococci get into the blood the prognosis is much more serious than when infection remains localized in the lungs.

We have corroborated the findings of Dochez, namely, that in untreated cases of pneumococcus pneumonia the protective substance is apt to make its appearance in the blood at about the time of crisis. If the protective substance does not make its appearance the patient develops septicaemia and death follows.

In 5 cases that showed no protective bodies at any time in the course of the disease all five died. When protective substance is administered to the patient in the form of pneumococcus antibody solution, the protective bodies usually appear in the circulating blood earlier in the disease. With rare exceptions it does not appear in the blood as long as the patient has a pneumococcaemia. As stated above, however, the protective substance usually drives the pneumococci from the blood, especially in Type I cases. In other types it is more difficult to sterilize the blood once septicaemia has developed, but if treatment is started early the protective substance may act as a prophylactic against pneumococcus septicaemia.

Occasionally the blood is sterilized in pneumonia, but the patient dies of anoxaemia or heart failure. This, however, is very unusual. Sterile blood in pneumonia usually means recovery.

Huntoon's pneumococcus antibody solution as originally prepared often produced foreign protein reactions when administered intravenously. We have tried the effect of subcutaneous injections of antibody solutions, but have found that when antibody is injected subcutaneously a considerable part of the protective substance is blocked in the subcutaneous tissue and never enters the circulation. Some cases treated early appeared to be benefited by subcutaneous treatment, but altogether the results were rather disappointing. More recently Huntoon has been able to produce antibody solution which causes no reaction when injected intravenously. We now have a series of 15 cases treated intravenously without the occurrence of chills. Similar results have been obtained in other institutions.

We have tested Felton's concentrated anti-pneumococcus serum on about 75 patients. The treatment has always been by the intravenous route. Approximately 10 per cent. of the patients treated have had chills following the injections. This is a disadvantage which probably can be eliminated. Felton's serum produces striking drops in temperature in many of the Type I cases. In other types our experience has been too limited to justify any conclusions.

It is very unfortunate that so few pneumonias are admitted to our city hospitals during the early days of the disease. Dur-

ing four years study of specific therapy in pneumonia in the wards of Bellevue Hospital we have been able to treat only 163 cases of pneumococcus pneumonia during the first 48 hours of the disease. In this series of 163 cases, all of which were treated either intravenously or subcutaneously with Huntoon's pneumococcus antibody solution, the death rate was 14.1 per cent. In 210 control cases admitted to the hospital during the first 48 hours of the disease the death rate was 29.0 per cent. This is a comparatively small group on which to base conclusions, but a cut of one-half in the death rate for treated cases is certainly significant.

At the present time there are three specific products on the market for the treatment of pneumococcus pneumonia:

1. The Type I anti-pneumococcus serum of Cole.
2. Huntoon's pneumococcus antibody solution.
3. Felton's concentrated anti-pneumococcus serum.

The first is applicable for Type I cases only. The last is prepared now for both Type I and Type II cases. Huntoon's antibody solution is polyvalent, containing protective bodies against Types I, II, and III. Its potency against Type II, however, is considerably less than against Type I, and its potency against Type III is even smaller. The advantage of Huntoon's antibody solution lies in the fact that it contains no horse protein and is, therefore, incapable of causing anaphylactic shock or serum sickness. Felton's solution contains very little horse protein; indeed, the amount is so small that it seldom if ever causes serum sickness. Enough protein is present, however, to induce symptoms of anaphylaxis in a highly sensitive person. Huntoon's solution is, therefore, preferable to Felton's in respect to protein content. On the other hand Felton's solution has the advantage of being more potent in protective substance than either the original Type I serum or Huntoon's antibody solution.

Finally I wish to emphasize that the chief function of anti-pneumococcus serums of all kinds is to prevent pneumococcus septicaemia or to cure it. It is much easier to achieve the former than the latter. The importance, therefore, of early treatment must be apparent to all. The more concentrated the product the more efficient will be the treatment. The efforts now being made

to purify and concentrate anti-pneumococcus serum are in line with the purification of various pharmaceutical and biological products, a field of research in which there have been important advances during the past few years. In view of the very beneficent effect which the protective substance produces on pneumococcus infections it is not unreasonable to believe that the solution of the pneumonia problem is not far distant. Almost every day new knowledge is being added to the subject and even now agents are available which are undoubtedly of value in controlling the commoner types of pneumococcus pneumonia.

ANNOUNCEMENTS

THE Committee on Publication is instructed to announce that the Academy does not hold itself responsible for the facts or opinions set forth in any of the papers contained in its printed transactions.

COLONEL FIELDING H. GARRISON, Librarian of the Surgeon General's Office at Washington, D. C., has accepted the position of consulting librarian of the Academy. Arrangements have been made for Colonel Garrison to make regular visits to New York in order that his services may be available to the Fellows of the Academy desiring assistance in Bibliography, preparation of papers requiring research, criticism, revision or reduction of manuscript for the press, etc.

AT the stated meeting held January 15, the Fellows of the Academy voted to increase the number of trustees from five to ten. The new trustees elected at the stated meeting held March 5 are as follows:

Royal S. Haynes to serve five years until Dec. 31, 1929.
James A. Miller to serve four years until Dec. 31, 1928.
George B. Wallace to serve three years until Dec. 31, 1927.
Fordyce B. St. John to serve two years until Dec. 31, 1926.
Eugene H. Pool to serve one year until Dec. 31, 1925.

DR. OLIVER WENDELL HOLMES AND HIS POEMS

When I was a medical student there was circulated amongst us a poem by Oliver Wendell Holmes written evidently to be read before some private medical society; it was witty and interesting, but it had some anatomical references that evidently made it unwise to have it published. However, I was so much interested in the poem that I wrote to Dr. Holmes asking permission to have one copy privately printed for my own use. He replied that he did not wish this done and urged me to send my copy to him. I did not do this but simply tore the poem up. The incident, however, got me interested in Dr. Holmes' career, and particularly in his poetry. This interest was increased by the fact that about this time the profession of New York invited Dr. Holmes to come to this city and attend a dinner to be given in his honor. He did this and I was present at the dinner, and for the first time in my life heard a real poet read his own real poetry. Dr. Holmes read his verses in an inimitable style which very much thrilled me. The occasion altogether was very impressive to me, for all the medical and surgical celebrities of the city were there. The speeches and poetry were subsequently published in a volume which is included amongst those that I have presented to the Academy.

Some impulse stirred me after this to collect the first editions of the poems of Oliver Wendell Holmes. My interest was increased by finding so much of associated history in the various and unique publications in which they appeared.

Dr. Holmes was essentially a poet of occasion and especially of the occasions commemorative of historical events or of important historical characters. One cannot go over the several volumes in the collection without learning much of the history of New England and its important men. Dr. Holmes was not a great poet, though he did write a few great poems. And he never wrote poetry that was dull or bad. He was not and did not pretend to be a great physician or anatomist, but he did make a definite and extremely important contribution to clinical and preventive medicine when he came out in his paper on the septic theory of puerperal fever; and as a teacher and writer he made real contributions to education and literature. The history of American medicine will always have to tell something of the story of his life and his career.

CHARLES L. DANA

A COLLECTION OF THE FIRST EDITIONS OF THE POEMS OF OLIVER WENDELL HOLMES

PRESENTED TO THE LIBRARY BY DR. CHARLES L. DANA

The harbinger; a May gift. Boston. 1833.

Terpsichore. Phila. 1844.

Poem: "Come back to your mother, ye children, for shame," read at Berkshire jubilee, August, 1844. Albany. 1845.

Poems. London. 1846.

Urania: a rhymed lesson . . . pronounced before the Mercantile Library Association, October 14, 1846. 2nd edition. Boston. 1846.

Poem . . . delivered at the dedication of the Pittsfield cemetery, September 9, 1850. Pittsfield. 1850.

Astraea: the balance of illusions. A poem delivered before the Phi Beta Kappa Society of Yale College, August 14, 1850. 1st edition. Boston. 1850.

Response . . . at an entertainment given to the American Medical Association by the physicians of the City of New York . . . 5th of May, 1853. . . . A poem. N. Y. 1853.

Oration at the semi-centennial celebration of the New England Society, in the City of New York, December, 1855. Also poem: Lines to New England. N. Y. 1856.

Poem in memory of Daniel Webster. Boston. 1856.

Tribute to his friend, classmate and pastor, James Freeman Clarke, at the commemoration of the fiftieth birthday of J. F. C. 1st edition. Boston. 1860.

Vive la France! A sentiment offered at the dinner to H. I. H., the prince Napoleon, at the Revere House, Sept. 25, 1861. Cambridge. 1861.

Songs in many keys. Boston. 1862.

Poem read at a reception and entertainment to the Chinese embassy by the City of Boston, 1868. Boston. 1868.

Hymn in memory of Charles Sumner. Boston. 1874.

A ballad of the Boston tea party. Boston. 1874.

Grandmother's story of Bunker Hill battle as she saw it from the belfry. Boston. 1875.

The school-boy. . . . With illustrations. Boston. 1879.
The iron gate, and other poems. Boston. 1880.
Benjamin Pierce, astronomer, mathematician. 1809–1890. Poem. From the Atlantic Monthly. Cambridge. 1881.
Proceedings at the dinner given by the medical profession of the City of New York, April 12, 1883, to Oliver Wendell Holmes, M.D., LL.D. N. Y. 1883.
A welcome to Dr. Benjamin Apthorp Gould. Poem. Lynn. 1885.
Before the curfew and other poems, chiefly occasional. 1st edition of collection. Boston & N. Y. 1888.
Poem in memory of Francis Parkman read before the Massachusetts Historical Society, November 21, 1893. Boston. 1893.
The last leaf. Poem. . . . Illustrated by George Wharton Edwards and F. Hopkinson Smith. Cambridge. 1895.

ARTISTIC PORTRAITS OF PHYSICIANS

In olden days, and more especially in the 18th and early 19th centuries, successful physicians had their portraits painted and engravings or mezzotints made from these for distribution and sale. It was before the day of photographs. These reproductions were usually done by good artists; and the portraits are on sale in New York now just because of their artistic value. My interest in collecting portraits of physicians during the last twenty years led me to get all that I could find of this class of portraiture. Naturally it included many distinguished names, such as those of Jenner, Hunter, Haslam, Boerhaave, Pitcairn, Abernethy; but also many that are unfamiliar. The names of the artists will be recognized only by those who have spent time on woodcuts, steel and mezzotint engravings; the list includes—*e.g.*, Masson, Nanteuiil, Sharp, Jones, Marshal, Faithorne and Edelinck. It may interest some of the Fellows of the Academy to feel that they are seeing something of art while getting portraiture-suggestions of medical history.

Some of the older Fellows may remember that Sir Thomas Watson wrote a text-book on medicine which was famous for its literary quality and descriptive excellence. The engraving of Sir Thomas in my collection is, as was his book, a masterpiece of personal and artistic interest. CHARLES L. DANA

THE COLLECTION OF PORTRAITS

PRESENTED TO THE ACADEMY BY DR. CHARLES L. DANA

Sir William Burnett (mezzotint)
John Anthony (engraving)
Joshua Brooks (engraving)
Theodore Craanen (engraving)
Sir William Blizard (mezzotint)
Conrad Hieronymus Eberhard (mezzotint)
George Eberhard Rumpf (engraving)
K. B. Reichert (lithograph)
Giovanni Rasori (lithograph)
Thomas Garnett (lithograph)
Hieronymus David Gaub (engraving)
Thomas Glass (mezzotint)
Joh. Jacob Baier (engraving)
Thaddeus Bayer (engraving)
Dr. Bethune (?) (lithograph)
Samuel De Lion Benavente (mezzotint)
John Andrews (mezzotint)
William Bromfield (mezzotint)
Sir B. C. Brodie (mezzotint)
Joseph Brandreth (engraving)
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G. Darling (mezzotint)
Barth. Dominiceti (engraving)
Antonius D'Aquin (engraving)
Isbrand Diemerbroeck (etching)
Galen Abrahamsz (engraving)
Jacob de Castro Sermento (mezzotint) 2
Henry de Grandjean (engraving)
Robert Gooch (engraving)
Thomas Gill (mezzotint)
James Johnstone, jr. (etching)
Robert Cony (mezzotint)
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Busick Harwood (mezzotint)
John Haighton (lithograph)
George J. Guthrie (mezzotint)
John Grosvenor (mezzotint)
Richard Grindall (mezzotint)
John Fletcher (mezzotint)
Gerbrand van Leeuwen (engraving)
Wilson Fox (photogravure ?)
Daniel Turner (mezzotint)
James Scott (mezzotint)
John Scott (mezzotint)
Christian Gottlieb Selle (mezzotint)
Edmund King (mezzotint)

Johannes Jacob Seubert (etching)
Ludolph Smids (mezzotint)
Alexander Small (mezzotint)
Samuel Sobiere (etching)
Rudolph Siltemann (mezzotint)
John Sims (mezzotint)
Joseph Thackeray (mezzotint)
John Thomson (mezzotint)
Robert Bentley Todd (mezzotint)
Vopiscus Fortunatus Plempius (etching)
Henry Prude (mezzotint)
Charles Peters (etching)
T. G. von Pempelfurt (mezzotint)
Giovanni Battista Paletta (engraving)
I. S. Ogle (?) (lithograph)
Friederich Hermann Ludewig Muzell (engraving)
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Johannes De Mey (etching)
Jacques Mentel (etching)
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Meissner (etching)
Richard Mead (mezzotint)
Alexander Marcet (lithograph)
Maclean (mezzotint)
Sir James McGrigor (mezzotint)
Lushington (lithograph)
Sir James Leighton (engraving)
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John Latham (lithograph?)
Sir William Knighton (mezzotint)
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D. B. St. John Roosa (etching)
Imanuel Capadoce (etching)
Woodward (mezzotint)
Alexander Wood (lithograph?)
Michael Gottfried Wittber (mezzotint)
Wildberger (lithograph)
Erasmus Wilson (mezzotint)

FRAMED PORTRAITS

PRESENTED BY DR. REGINALD H. SAYRE, JANUARY, 1925

Reginald Harrison (lithograph)
A. Armstrong (lithograph)
Samuel Cooper (mezzotint)
Arthur G. Dunham (photograph)
John Hunter (etching)
A. Denman (mezzotint)

PROGRAMS OF STATED MEETINGS

Scientific programs for the Stated Meetings of the Academy to be held during the current year have been arranged as follows:

March 5th

Typhoid fever in New York

1. Features of public health interest in relation to the recent typhoid fever outbreak.

   LOUIS I. HARRIS

2. The points of interest to the practicing physician in the methods of fecal examination for B. Typhosus as carried out by the health department.

   CHARLES KRUMWIEDE

3. Clinical observations during the recent outbreak of typhoid fever.

   WARREN COLEMAN

March 19th

Program arranged in cooperation with the Section of Ophthalmology.

Symposium on headache.

1. Ocular headache.

   GEORGE E. DE SCHWEINITZ, Philadelphia

2. Headache from the viewpoint of the neurologist.

   FOSTER KENNEDY

3. Headache of nasal origin.

   R. H. SKILLERN, Philadelphia

4. Headache from the viewpoint of the internist.

   LUDWIG KAST

April 2nd

1. The application of surgery in the treatment of mitral stenosis.

   CLAUDE S. BECK, Cleveland, Ohio

2. The surgical relief of cardiac pain.

   WILDER PENFIELD

3. The indications for surgical procedure in heart disease.

   SAMUEL A. LEVINE, Boston

April 16th

Program arranged in cooperation with the Section of Neurology and Psychiatry.

May 7th

Program presented by the New York Post Graduate Medical School and Hospital.

May 21st

Program presented by the Loomis Sanitarium.

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L. PIERCE CLARK — CHARLES E. ATWOOD

10.5
JUL 8 1926

TABLE OF CONTENTS

Proceedings of the Annual Meeting, Jan. 15, 1925:

Address of the Incoming President, SAMUEL A. BROWN... 7

Report of the Board of Trustees... 13

Report of the Treasurer... 15

Abstracts of papers presented at the Stated Meeting of Dec. 4, 1924:

Oxygen therapy in pneumonia, CARL A. L. BINGER... 17

The rationale of specific treatment of lobar pneumonia, RUSSELL L. CECIL... 22

Announcements:

Increase in the Number of Trustees... 27

Appointment of a Consulting Librarian... 27

Important Library Donations... 29

Programs of Stated Meetings... 33